Mesa Burner Controller MBC200

Burner controller with integrated Ignition transformer extended parameterizing features and air control, in robust aluminum IP54 housing, with optional PC software for configuration and diagnostic. Profibus interface, with additional I/O for customer application.

Features:

- Working with ionization current or UVS flame detection
- Flame monitoring and ignition in 1 or 2 electrode mode
- Settings of flame safety threshold and safety times
- Ignition transformer inside housing, selection of ignition time.
- Parameterizing of recycling and start-up attempts
- Settings of minimal burning time, cycle time, burn-off time
- Intermittent and continuous operation
- Gas valve position detection option to proof closing of valve
- Second gas valve activated with V1, or after proving period, or at additional Burn-On input
- Extended Air working and parameterizing including combustion air, cooling with combustion air and additional cooling pipe. External air control possible
- Air working in malfunctions defined by parameters
- Combustion air pressure detection in burning phases and purging, settable by parameters
- Additional pressure switch for burner jacket tube breakage detection
- Large 20mm four digits display for indication of flame current, working and error states
- Statistical and diagnostic data saving inside device, including overall working time and switching cycles.
- Manual working for burner and controller test and adjustments
- Standard or Profibus working

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Accessories

- Standard connection plate with four cable glands or
- Connection plate with industrial heavy duty 16 pole connector and two cable glands
- Industrial female connector 16-pin
- UVS sensor
- PC configuration and logging software, with optical optic magnetic fixated serial interface adapter
- USB logging Stick

Optional Communication interface and I/O

- Profibus DP interface
- Profibus IP67 plug connector with switch for therminal resistance
- Profinet will be soon

Technical Data

Housing: Aluminum 200 x 200 x 111 mm (WxHxD)
Weight: 5.3kg
Degree of Protection: IP54 according to IEC 60529
Construction Class: Class I
Display: four digits 20mm, Flame current, working state, errors and parameters presentation
Power Supply: 230 V~, -15%/+10%, 50/60 Hz
Power Consumption: 13VA, plus ignition transformer working
Ambient temperature: -20°C to +60°C, no dew formation permitted
Maximal number of operation cycles: 250000 pursuant to EN 298
Mains switch: 10000
Keyboard switches: 100000

Flame monitoring: DC component detection under AC 230V excitation, current range 1µA to 40µA, sensor cable length up to 5 m.
Connection: Metal Cable Glands, optional heavy duty industrial connector.
Electrical connection is inside housing by pluggable 2.5mm^2 terminals.
PE terminals 4mm^2, not pluggable type.
Ignition transformers: Inductive 230V/50Hz, 8KV/20mA/19% inside housing as standard.
Primary current: standard 1A, max 2A.
Ignition cable length: 5 m maximal.
Digital inputs: ~230V type, "0": 0..40V, "1":160..253V, cable length 100m,
Valves Digital outputs: Relay type, contact rating ~230V/1A, cosφ=1. Cable length 5m.
Total current of gas valve relays and ignition transformer 2.5A
Total current for air, cooling and Waste flap outputs: 2.5A
Alarm and Burn-On digital outputs: Relay type free potential, contact rating ~230V/2A or +24V, must be the same type (not allowed one ~230V, and other +24V). Cable length 100m.
PRF digital output: Relay type free potential, contact rating ~230V/2A or +24V. Cable length 100m.
Fuses: replaceable: F1, F4 = T3.15A L 250, 5mmx20mm, according to IEC 127
non replaceable: F2 = T5A, T3 = 0.5A

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Functional characteristics according to EN298, Table AA.1, configurable by ordering and software:

Safety time on start-up: from 3s to 10s

Safety time during operation: from 1s to 2s

Pre startup air supply time: from 0 to 10s

Waiting time (Inter recycle off time): from 0s to 25.0s

Non volatile lock out at error: always present

Ignition restoration: not available

Recycling: available by parameter

Permanent operation: not available with provided UV sensor

Spark supervision: not available

Flame proving period: from 0s to 25.5s

Other working times:

Ignition time: from 1s to 6 s

Minimum cycle time: from 5 to 250s

Minimum burning time: from 3 to 60s

Minimum burn off time: from 1 to 10.0s

Post shutdown air supply time: from 0s to 10.0s

Standards:

- EN 298:2012 (Automatic gas burner control systems for gas burners and gas burning appliances with and without fans)
- EN 60 730-1:2011 (Automatic electrical control for household and similar use)
- EN 60 730-2-5:2002+A1:2004+A11:2005+A2:2010 (Automatic electrical controls: Particular requirements for automatic electrical burner control systems).

Directives:

- Gas Appliance Regulation (EU/2016/426)
- Low Voltage Directive (2014/35/EU)
- Electromagnetic Compatibility Directive (2014/30/EU)

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Inputs and outputs

Version of device		Basic	Standard	Air	Extended Air
Inputs:	**Mark:**				
Safety Chain	SF	X	X	X	X
Fire Burst-ON	TH1	X	X	X	X
Remote Unlock	R	X	X	X	X
Pre Flushing	V			X	X
Cooling with combust. Air Or External Air control	K-VL			X	X
Combustion Air pressure switch	B1			X	X
Cooling Air	K				X
Additional pressure switch 2	B2				(1)
Valve position detect	POC		(1)	(1)	(1)
V2 Burst-ON	TH2		(1)	(1)	(1)
Fire current detect 1	FD1	X	X	X	X
Outputs:					
Gas valve V1	V1	X	X	X	X
Gas Valve V2	V2	X	X	X	X
Burn-ON signal	Burn-ON	X	X	X	X
Alarm indication	Alarm	X	X	X	X
Pre-flushing running Indication	PFR			X	X
Combustion air and Ejector	CIV			X	X
Waste gas flap	W			X	X
Cooling air Valve	AV				X
Profibus-DP		(1)	(1)	(1)	(1)

Only one goes to B2

Notes: (1) Must be special order

- Grey colour rows - multiple functions share one common input, not possible all together.
- Burn-ON, Alarm and Pre-Flushing indication is with free contact.

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List of parameters

Par	Name	Default value	Range	Allow to change
1	Profibus working enable	0	0=Off 1=On	fix
2	UVS checking Intermittent Work	1	0=Off 1=On	USB log
3				
4	Manual burning limited duration If ON, after 4 minutes stop burning in manual mode	1	0=Off 1=On	USB log
5	Recycling after loss of flame enable	0	0=Off 1=On	login
6	Number of startup attempt	1	1 to 3	USB log
7	Flame1 threshold	2.0uA	1.0uA to 20.0uA	login
8	Permanent display of flame enable	1	0=Off 1=On	login
9	Ignition time (must be one second less than startup safety time)	1.8s	1s to 6s	USB log
10	Safety time during start	3.0s	3.0s to 10.0s	USB log
11	Safety time in operation	1.0s	1.0s to 2.0s	USB log
12	Minimum cycle time	10s	5s to 250s	login
13	Minimum burning time	4s	3s to 60s	login
14	Minimum burn off time	4.0s	1.0s to 10.0s	login
15	Minimum burn off after unlock	6.0s	3.0s to 25.0s	USB log
16	Flame1_1 offset correction	0.0uA	-2.0uA to +2.0uA	USB log
17	Flame1_2 offset correction	0.0uA	-2.0uA to +2.0uA	USB log
18	Inter recycles off time	2.0s	0.0s to 25.0s	USB log
19	UVS Burn-On limit	1.0h	0.1h to 18.0s	USB log
	AIR working			
23	Air function enable	1	0=Off 1=On	fix
24	Extend air function enable	1	0=Off 1=On	fix
25	Burning phase internal control enable	1	0=Off 1=On	USB log
26	Enable KVL in lock-out state	0	0=Off 1=On	login
27	Enable KVL in NoSF state	0	0=Off 1=On	login
28	Enable PFF in NoSF state	0	0=Off 1=On	login

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29	Enable K in NoSF state	0	0=Off 1=On	login
30	Pressure SW1 enable global and in PFR state	1	0=Off 1=On	USB log
31	Pressure SW1 enable in burn-on state	1	0=Off 1=On	login
32	Pressure SW1 enable in KVL state	1	0=Off 1=On	login
34	Pre startup air supply time	2.0s	0s to 10.0s	login
35	Post shutdown air supply time	2.0s	0s to 10.0s	login
36	Pre start waste flap open enable	0	0=Off 1=On	login
37	Pre start waste flap open time	2.0s	0s to 10.0s	
38	Waste gas flap in K-cooling closed	1	0=Off 1=On	USB log
39	KVL command inverted	0	0=Off 1=On	USB log
40	Pre air after unlock unable	1	0=Off 1=On	USB log
41	Pre air after unlock time	4.0s	0s to 10.0s	USB log
42	Pressure SW2 global enable	0	0=Off 1=On	login
43	Pressure SW2 delay time before checking	3.0s	0.0s to 10.0s	login
44	Pressure SW2 enable in burn on state	0	0=Off 1=On	login
45	Pressure SW2 enable in PFR state	0	0=Off 1=On	login
46	Pressure SW2 enable in KVL state	0	0=Off 1=On	login
47	Pressure SW2 enable in cooling with K	0	0=Off 1=On	login
48	Enable air during startup of flame	1	0=Off 1=On	login
49	Working with 60Hz electrical power grid	0	0=Off 1=On	fix
Position checking Two gas valve working, High temperature working				
52	POC - proof of closing for gas valve, burners>117KW	0	0=Off 1=On	fix
53	Activate Burn-ON and V2 only after fire is proven	0	0=Off 1=On	login
54	Activate V2 in burning with TH2 input	0	0=Off 1=On	login
55	Flame proving time, before Burn-ON and V2	0.0s	0.0s to 25.5s	login

Parameters can be ordered, or changed by PC software after secure login. "USB log" is for more secure login with USB stick. Values can be inspected at device display.

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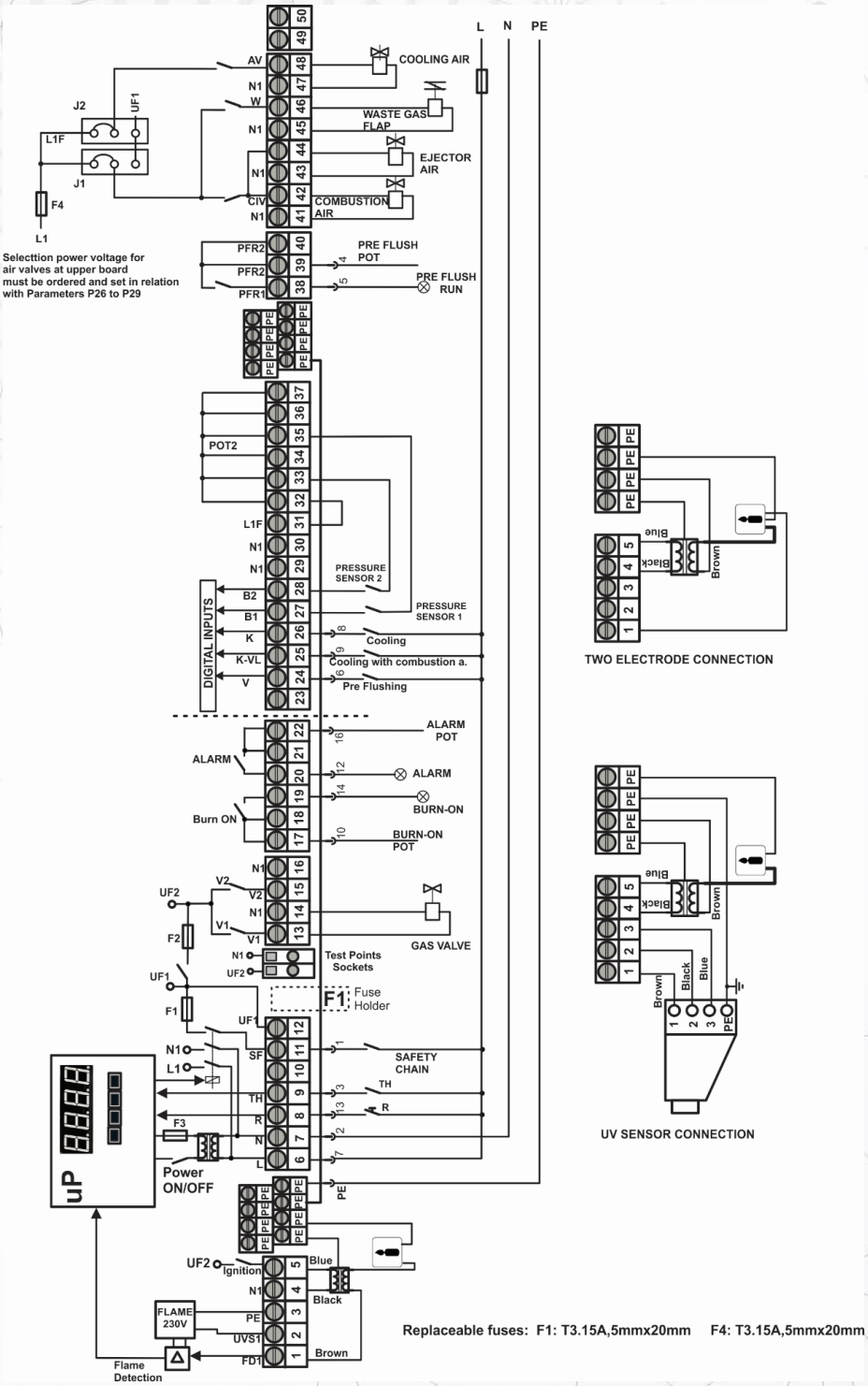
Electrical connection, device without Profibus option:



Replaceable fuses: F1: T3.15A,5mmx20mm F4: T3.15A,5mmx20mm

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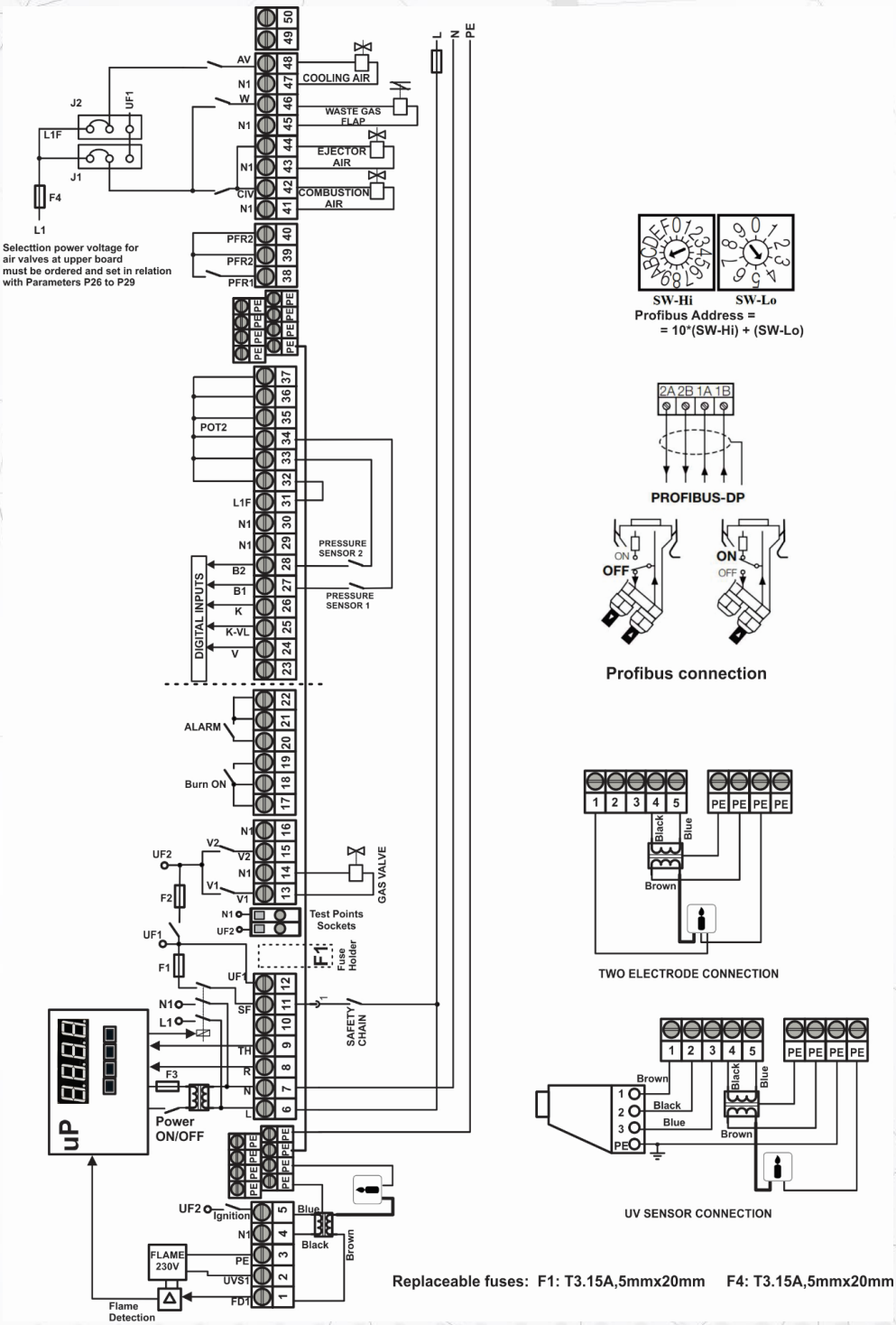
Electrical connection, device with Profibus:



Profibus Address =
= 10*(SW-Hi) + (SW-Lo)

PROFIBUS-DP

Profibus connection

TWO ELECTRODE CONNECTION

UV SENSOR CONNECTION

Replaceable fuses: F1: T3.15A,5mmx20mm F4: T3.15A,5mmx20mm

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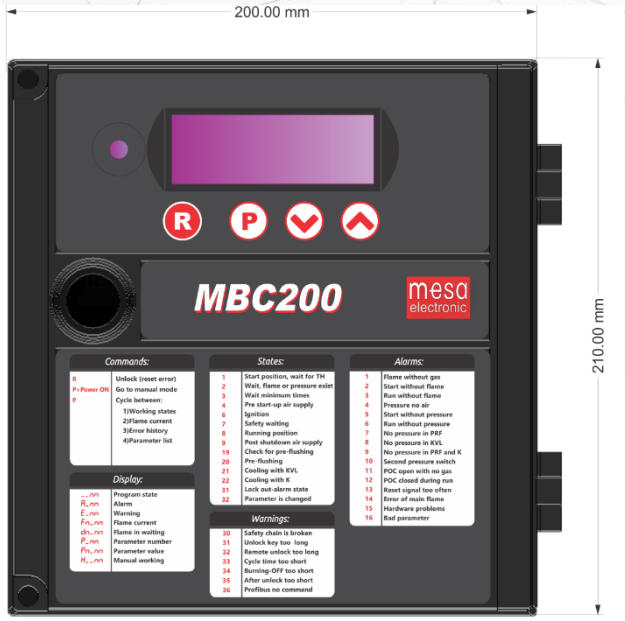
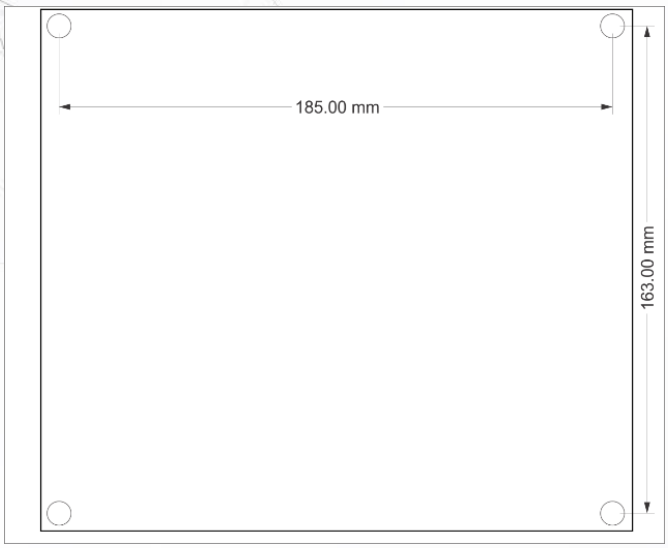
Housing



Housing mounting holes



Connection plate with heavy duty industrial male and female connector

Order number	Device name
535-1000	Mesa Burner Controller MBC200-Basic
535-1010	Mesa Burner Controller MBC200-Standard
535-1020	Mesa Burner Controller MBC200-A
535-1030	Mesa Burner Controller MBC200-EA

Additional options and accessories

535-1100	Ultra Violet Sensor UVS M01
535-1099	Ultra Violet Sensor UVS M02
535-1101	Connection plate with four cable glands - standard
535-1102	Connection plate with heavy duty industrial male 16 pole connector
535-1103	Heavy duty Industrial female 16 pole connector
535-1104	PROFIBUS DP interface
535-1105	PROFIBUS plug connector
535-1106	MBC200-IrDA optical adapter + "MBC200 Test" PC configuration program + USB logging Stick
535-1107	USB logging Stick